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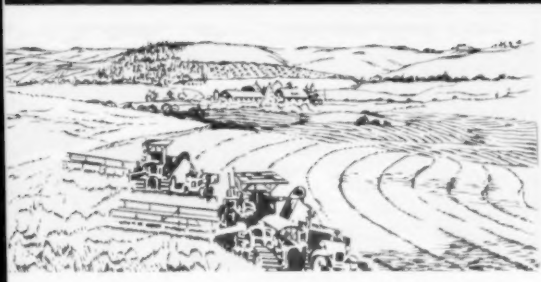

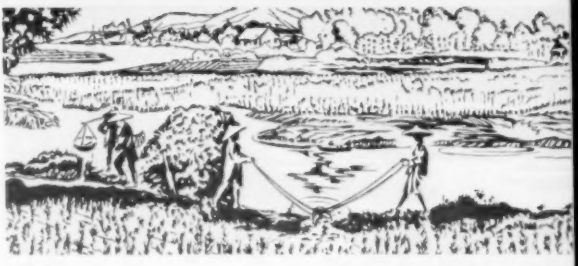

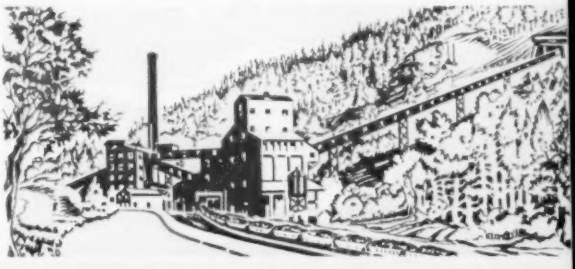

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BALTIC STATES

Brief Survey of Their Landscape, Economy, Population and Settlement

ANTON PARTS
Port Washington, New York

One of the outstanding morphological features on the physical map of Europe is the boundless East European or Russian Plain which spreads thru Russia from the Ural Mountains to the Baltic Sea. On the western margin of this great platform lie the Baltic States (Baltic countries, Balticum) which are bordered on the north by the Gulf of Finland and on the west by the Baltic Sea. The Baltic countries—Estonia, Latvia and Lithuania—with their 68,000 square miles of area form nearly 1.78 per cent of the total area of Europe and compare roughly in size to the State of North Dakota (Fig. 1).

GEOLOGY AND LANDSCAPE

In general the superficial topography and the tectonic of geological bedrock of the Baltic area present remarkable simplicity. From east to west thru North Balticum extends the wide Paleozoic limestone plateau which continues into the Baltic Sea forming over 80 islands and islets in the vicinity of the Estonian coast. This rocky plateau, consisting of Ordovician and Silurian limestone and dolomites, stops abruptly on the coast of the Gulf of Finland forming here a majestic coastal terrace, known as the North Estonian Glint (cliff, escarpment). The Glint appears as the marked fault-line between the archaic bedrocks of Fenno-Scandia and the paleozoic Balticum. It presents one of the most attractive views in Balticum's landscape.

The entire southern part of Estonia and northern Latvia rest on the Devonian sediments of old red sandstone and dolomites. Near the Latvian southern border, Devonian sediments are slowly being replaced by a Mesozoic formation. Farther southward the

22°
24°
26°
28°
Tallinn
Narva
Baltic Sea
ESTONIA
Peipus
Tartu
Pärnu
58°
Gulf of Riga
Valga
Pskov
Riga
LATVIA
Jelgava
Liepāja
Rēzekne
56°
Šiauliai
Daugavpils
Klaipeda
Memel
LITHUANIA
Kaunas
Vilnius
USSR
54°
Map of Baltic States
50 0 50 100km

FIG. 1.

underlying bedrock of Lithuania is mostly covered by an enormously thick morainic mantle and a few bared strata give reason to believe that there are Mesozoic and Tertiary sediments in the bedrock of Lithuania. The Baltic area has no striking height. Its average elevation is about 200 feet above sea level, being higher in the eastern part of Balticum. Here rise Balticum's most extensive highlands created by the accumulation of glacial sediments during the last Glacial Epoch approximately 10-12,000 years ago.

As is known, the huge glaciers and especially the fluctuating ice-front made a lasting contribution in forming the land surface of the Baltic countries. Because of the varying speed of the retreating ice-front, northern and sounthern Balticum acquired a marked difference in their superficial deposits. In northern Balticum, where the ice-front receded rapidly, it left very few glacial sediments behind. The southern and eastern parts of Balticum, however, represent an area of glacial accumulation with typical lateral, terminal and ground moraines. These morainic landscapes were formed by the double action of glaciers and glacial melt-waters during the glacial cycle; the major part of Balticum's land forms are also the result of these factors. Among the land forms we find here parallel-running ridges of glacio-fluvial eskers and drumlins, irregularly scattered hills and knolls, ice-dammed lakes, fluvio-glacial valleys and outwash plains. The ground morainic plains, covered with boulder clay and sand, are in general the most favorable regions for agriculture.

The western part of Balticum, especially the coastal region and islands, are of somewhat different origin. It is mostly occupied by a lowland having an altitude less than 100 feet, and it is covered by natural meadows, forests and swamps. During the Late and Post-Glacial times all of western Balticum was flooded by the transgression of the Baltic Sea which washed away its soils and covered it with marine sediments. Due to the poor top soil, the coastal lowland is more suitable for animal husbandry than agriculture.

Climate

The nearness of the sea has a strong moderating influence upon the climate of Balticum. Accordingly, Balticum's climate is generally temperate-cool: the average temperature for the four warmest months remains above 50°F. The annual mean temperature for Lithuania is 43.7°, for Latvia 42.8° and for Estonia 40.8°F.

Especially mild are the winters in the western part of Balticum. Thruout the year the prevailing winds in Balticum are from the south-west; this is due to the intense cyclonic activity in the North Atlantic. The cyclones or low atmospheric pressures bring moisture and warmth in the winter and coolness in the summer.

Precipitation occurs thruout the year and its amount increases from north to south. Estonia has an average of 21.6, Latvia 23 and Lithuania 24.5 inches per annum. Most precipitation falls as rain, less as snow. The warm period stays about 7 months, while the loveliest weather exists from June to the end of August. This short interval with its bright nights and with a rapid blossoming and ripening of nature is one of enchantment and beauty.

Agriculture

Economically the Baltic States are typical agricultural countries. Since early primitive ages, agriculture has been the basis for their economy, altho western Balticum is not at all favorable for agriculture. At present most cultivated and extensively farmed lands are located in the hilly central zone of Balticum. Here the highlands and rolling plains have fertile top soils with rich glacial clay loam and sand (Fig. 2).

Statistical data show that arable land constitutes 24.9 per cent of Estonia's, 33.6 per cent of Latvia's, and 51.8 per cent of Lithuania's total used land. All three countries are chiefly grain producing countries: about one-third of the total arable land area is used for food grain (rye and wheat). Rye is the chief bread grain of Balticum and the annual production of rye in Lithuania is 660,000, in Latvia 495,000 and in Estonia 275,000 metric tons.

Secondary importance is placed upon the production of fodder crops (barley, oats, mixed grains). Their total acreage is nearly equal to that occupied by bread grains. Potatoes also play an important role in the agricultural production of Balticum. The damp climate and lime-rich soils of Balticum are ideal for the production of potatoes free of virus and potato cancer. Potato crops in the three Baltic States amounted to 5.3 millions tons annually. Potatoes find extensive use as fodder for livestock and pigs. They are also used in potato starch-flour and the distilling industry. The most important field crop for export and a source of income for small

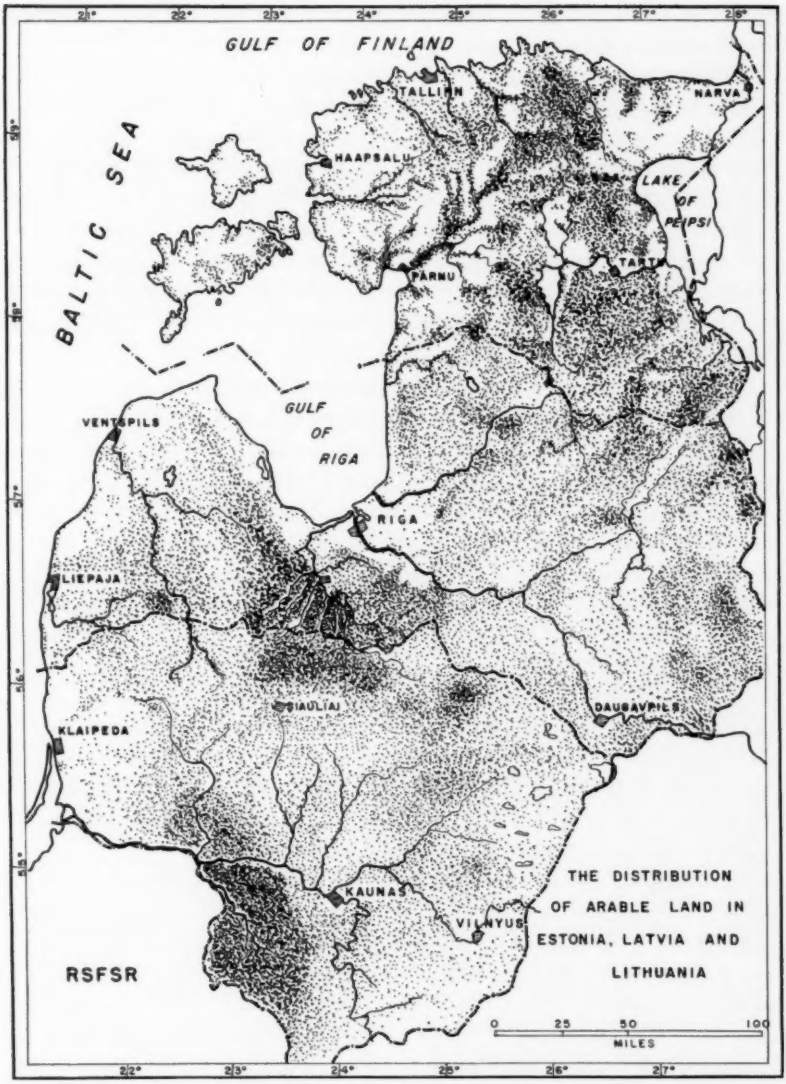

FIG. 2. The distribution of agriculture in the Baltic States is represented by dots on the map. Densely dotted areas indicate regions with the most cultivated lands and with intensive agricultural activity.

farmers is flax. The annual production of flax fibre in Balticum reached nearly 65,000 tons.

The average yield of grain per acre in Balticum was 1,600 lbs. which is one-fifth less than in Sweden, but 65 per cent more than that of adjacent North Russia. Out of the three Baltic States, the best yield of grain was obtained in Lithuania with an average of 1,700 lbs. per acre; Latvia had 1,625 lbs. and Estonia 1,325 lbs. per acre. Before the Soviet occupation 76 per cent of Lithuania's, 69 per cent of Latvia's and 60.2 per cent of Estonia's total population were engaged in agriculture. The availability of cheap manpower is one of the reasons why mechanization of Balticum's agriculture has been rather limited.

FARMING

Without exception the Baltic farmers mix crop farming with animal husbandry, the last being the main source of income. Thanks to the excellent natural grazing lands, meadows and pastures, western Balticum is especially suited for cattle raising. In recent years dairy farming has incerased rapidly and plays a dominant part in Balticum's agriculture. The raising of pigs, sheep, and poultry is widespread, but economically less important. The total number of cattle in the Baltic States (1940) numbered 3.3 million, of which 2.15 million were milk cows; that is, for every 100 persons there were nearly 40 milk cows. The milk production amounted to 4.5 million metric tons yearly, of which 80 per cent was marketed as dairy products. The export of butter in the three Baltic States made up nearly 20 per cent and the export of agricultural products about 50 per cent of the total export value. The main consumers of Baltic farm goods were Great Britain and Germany.

The size of most of the farms in Balticum was between 10 and 50 acres. Large holdings up to 250 acres numbered only a few thousand in all three states. During their short period of independence, the Baltic states made tremendous steps toward the modernization of agriculture. The small farmers prospered thru the Land Reform and the establishment of cooperative organizations, following the example set by Danish farmers. The cooperative creameries and slaughter-houses, meat-selling, butter and egg export cooperatives, the consumer cooperatives and central credit societies helped to increase production and to raise profits for farmers. After 10 years of independence the average milk production per dairy cow was raised 1.3 times and it ammounted to 2,185 quarts per annum.

Farm Decline and Collectivization

The principle of private ownership in land usage existed also in the first stage of the Russian occupation until 1948. Altho the Soviet Government declared that Balticum's highly efficient small-farm system would be preserved, in 1949 the land was suddenly nationalized, farms split up, and the collective farming system introduced. As a result of this the agricultural production had fallen to roughly 58 per cent of its pre-war level, accompanied by a shortage of foodstuffs and from there a lowering of living standards.

The decline of agricultural production is also due to the reduction of crop producing acres. Last year's Statistical Report "Narodnoje Khozjaistvo USSR" (Moscow, 1956) shows that Balticum's crop producing land has diminished by about 13.5 per cent. In 1955 cultivated land in Estonia was 782,000 ha.* (1940—918,000 ha), constituting a reduction of 14.8 per cent; in Latvia 1,470,000 ha. (1940—1,964,000 ha) a reduction of 13.6 per cent; in Lithuania 2,055,000 ha. (1940—2,497,000 ha) a reduction of 12.1 per cent.

Natural Resources

Balticum's most important natural resources are forests, peat, exploitable minerals, and waterpower. Forests occupy nearly one-quarter of Latvia's, one-fifth of Estonia's and 16.9 per cent of Lithuania's total area. Balticum's dominating trees are the conifers (pines, firs), followed by birches and aspens. One-third of the forest products is exported as building materials, pulp, cellulose, paper and plywood. The value of lumber exports reached 25-30 per cent of the total export of the Baltic States. The biggest buyer of Baltic lumber is Great Britain. Balticum's peat reserves are enormous. Nearly 12-13 per cent of the total area is occupied by swamps and bogs, 50 per cent of which is suitable for peat production. Peat makes up for the lack of coal and is extensively used by power plants and factories, and as household fuel.

Balticum lacks any valuable minerals. The poorest in natural mineral resources is Lithuania, while Latvia has considerable reserves of dolomites, limestones, gypsum, fireproof clays, clay, gravel, and quartz sand for the manufacture of glass and building materials. Latvia's porcelain, cement, dutch clinker and sheet-glass factories are concentrated at Riga and the vicinity, while several smaller hollow glass factories are spread out over the country.

* One hectacre (ha) is equal to 2.47 acres (approx.).

Estonia has the richest mineral deposits of the three states. Deep in northern Estonia's pre-Cambrian bedrock lie unexploited deposits of iron ore, whose full extent has yet to be established. Cambrian plastic blueclay is a source of raw material for the cement and brick industry. Estonian phosphate (P_2O_5) deposits are estimated at 51 million tons and production of domestic phosphate-fertilizers reached 20,000 tons yearly.

Economically the most valuable natural resource of Estonia is oil shale. The oil shale strata in northeastern Estonia covers an area of about 1,200 square miles and oil shale deposits amount to over 5,000 million tons, equivalent to 1,000 million tons of crude oil, as the oil shale yields nearly 20 per cent oil. Production of oil shale was in pre-war years 2 million tons yearly. Some of this was used as fuel, but over half of the production was distilled into oil and by-products. The distillation of oil began in 1924 with the opening of the state's Kohtla-Järve oil refinery, to be followed by three more plants financed by foreign investors. The annual production during the last year of independence (1939) was 179,000 tons of fuel oil, 23,000 tons of benzine, and 15,000 tons of petroleum.

After occupying Balticum the Soviet Union began exploiting Estonia's oil shale in the interests of Soviet Russia's economy. In Kohtla's oil refineries the oil shale was converted into gas to supply the gas needs of Leningrad. A major pipeline for carrying gas between Kohtla and Leningrad was completed in 1948.

INDUSTRIES

Balticum's industry is relatively limited, but is still being developed. The number of people engaged in industrial processes varies from 10 to 18 per cent (in Estonia). The Baltic countries produce chiefly consumer goods of their own material for the home market and for export. The main emphasis is placed upon the processing of agricultural and animal husbandry products. Under this category fall flour mills, creameries, bacon factories, the distilling and beer industry, the food products industry and the leather industry.

About 20 per cent of the industrial workers finds employment in the textile industry, which is one of importance for these countries. The largest spinning and weaving factories are located at Narva, Tallinn, Riga, and Kaunas. The Kreenholm cotton mill at Narva was, before the First World War, the largest cotton mill in the

world with half a million spindles and 13,000 workers. It was completely destroyed by the Soviets in 1944, but has recently been restored to partial operation.

Besides the above mentioned large-scale industries, others of importance are the building material industry (cement, bricks), the chemical industry (artificial horn, matches, rubber), the engineering and the power industry. The engineering industry employs about 15 per cent of the industrial workers. The outstanding metal works are the Harbor Works at Liepaja, Riga and Tallinn, the Railroad Carriage Works and many machine-building factories at Tallinn and Riga. The light engineering industries are widely distributed in smaller cities.

In recent years the Baltic States underwent an intensive program of electrification and consumed over 1,000 million kwh. of electric energy annually. Balticum's well watered rivers and waterfalls provide natural sources of hydroelectric energy while peat and oil-shale are sources of thermoelectric energy. The largest waterfall, with a water-power potential of 90,000 horsepower lies on the River Narva supplying power to the cotton and woolen mills, linen manufactory and electric power plant of Narva. Latvia's largest and most modern hydroelectric plant, generating 24 million kwh. annually, was erected on the River Daugava at Kegums; it supplies electric energy for Riga and the vicinity. Numerous larger and smaller thermoelectric plants are scattered all over the whole of Balticum.

Population and Settlement

As is known, the Baltic area has been inhabited at least since the fifth or sixth century B.C. Who were the first inhabitants of this region has never been clearly established, but since the later Stone Age we have valid evidence that here resided three different peoples—Lithuanians, Letts, and Estonians. These three nations have remained here up to the present time. Estonians, descendants of Finno-Ugric stock, inhabit the Republic of Estonia (area 18,358 square miles, population 1.13 million) in the northern part of Balticum. The Letts reside in the central part of Balticum and the Latvian Republic with a population of 1.9 million occupies an area of 25,395 square miles. The most southerly of the three is the Republic of Lithuania with an area of 22,958 square miles, and a population of 2.9 million.

FIG. 3. Tallinn: The Tower Square. The historical and spacious "Tower Square" surrounded by seven towers, rising massively above the Old Town's 45 foot high West Wall.

The Baltic States are sparsely populated. In general the density increases from north to south: Estonia has 64 persons, Latvia 78.5 persons, and Lithuania 119 persons per square mile. In all three states the rural population is in the great majority (about 66 per cent of the total). The most common and the original type of settlement for the rural population is the isolated farm and to a lesser extent small villages (in Lithuania).

Balticum's network of railways and roads is dense and the traffic lively. A major part of the roads, highways, and bridges were built during the short independence period. Balticum's area is traversed by two direct railway lines between Central Europe and Russia, connecting Berlin with Leningrad. These communication lines pass thru some of the large cities of Balticum, like Vilnyus, Kaunas, Riga, Valga, and Narva.

Kaunas, with 190,000 people, is not only an important junction of several routes, but also a river port and the former capital of Lithuania. Its central location within the country has converted it into a cultural and intellectual center with a university, colleges, churches, museums etc. Altho Vilnyus (population 200,000) was proclaimed as the new Lithuania's capital in 1940, Kaunas has retained its cultural and industrial prominence.

The favorable location of the Baltic countries on the shore of the sea facilitates their participation in maritime traffic and trade. Their coastal fleet has more than 400 small vessels carrying passengers and goods between Balticum's ports. Also, all major Baltic ports are connected with regular shipping lines to Scandinavia, Germany, West Europe, and America. Among the largest harbors in Balticum are Klaipeda, (Memel), Liepaja, Riga, Pärnu, and Tallinn. Riga and Tallinn are also the main centers of shipping and foreign trade.

Riga (population 565,000) at the mouth of the River Daugava, founded in 1201, is Balticum's largest city and Latvia's capital. Riga is an old political and cultural center for Balticum, and an important industrial city with a shipyard and an airport.

Tallinn (population 257,000) has a favored position on the Gulf of Finland between the high Glint and the sea. The city was founded by Danes in 1219. Tallinn is the capital city of Estonia and a major Baltic port with a deep and safe harbor. Nearly 4,000 ships visit the harbor of Tallinn yearly (Fig. 3).

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FERAL BURROS IN THE AMERICAN SOUTHWEST*

Tom McKnight
University of California at Los Angeles

One of the most interesting members of the exotic fauna of the United States is the feral burro of the American Southwest. Altho the existence of wild burros in various parts of the West has been a long-recognized fact,[1] there has never been a comprehensive study to determine their distribution or to analyze the inter-relations between burros and the native fauna and domestic livestock. It is the purpose of this article to outline the present pattern of burro distribution, as well as to describe the basic land-use conflicts that exist in areas of burro concentration.

* The author is grateful for research subsidy from the University of California, Los Angeles, which made this study possible.

[1] Charles F. Lummis, "Brother Burro," *Land of Sunshine*, February, 1896.

Origin

Altho so-called wild asses inhabited most of Asia from the Gobi Desert to western Syria, it is considered conclusive that all American burros, both domestic and feral, are descendants of the Somali wild ass (*Equus asinus*) of northeastern Africa.[2] As the burro had been used as a beast of burden in southern Europe for several centuries, it was only natural that the early Spanish conquistadores brought these animals with them for use in exploring and settling the New World.[3]

Thus the burro had an early introduction to that part of North America that now comprises the southwestern United States; an introduction as a domesticated animal. Burros proved of inestimable value in the penetration and settlement of the Southwest, particularly with regard to mining and sheepherding operations. However, it was not long until "wild" burros began to make their appearance, as the domestic animals were set free by accident or design and became feral. In many instances the animals would simply wander off from a loose confinement. In other cases they were deliberately turned out "to shift for themselves." In any event, the desert mountain ranges soon had a considerable population of wild and semi-wild asses, as new generations were born into this feral existence.

Present Distribution

Today wild burros are found in considerable numbers in three western states (California, Arizona, and Nevada). In addition, seven other states (New Mexico, Wyoming, Utah, Colorado, Oregon, Idaho, and Texas) have small burro populations. The distribution is very spotty, and apparently depends on three major factors: (1) The nature of the environment (particularly terrain), which is an important determining element of how much competition for forage and water there is between burros and the native fauna or domestic stock. In general burros are found in rough country, where the natural vegetation is scattered and inferior in forage value, and where water is scarce. (2) The number of burros that originally "went feral" in the general area. Altho there is no proof of this factor, it is considered likely that burros have not wandered great distances from the localities where they or their ancestors were liberated. (3) The degree to which wild burros have

[2] George G. Simpson, *Horses*, Oxford University Press, New York, 1951, p. 20.

[3] Philip Ferry, "Burro or Bighorn?" *Pacific Discovery*, November-December, 1955, p. 18.

been deliberately killed by man. In some areas systematic extermination campaigns have eliminated or greatly reduced burro numbers. In other regions, lack of interest or protective regulations have resulted in very little burro shooting or poisoning.

Utilizing data obtained by an extensive mail survey and supplemental field interviews and observations,[4] the writer has been able to develop a crude but fairly accurate estimate of the current distribution of wild burros in the United States. Table 1 shows the estimated numbers, tabulated by states. Fig. 1 presents a generalized map showing the distribution pattern, which deserves closer scrutiny. The wild burros of California are mostly found in the Mojave Desert mountain ranges of the southeastern part of the state, altho a few inhabit Lassen County in northeastern California. Burros are widespread thruout western Arizona, but the eastern part of that state has very few. Nevada contains a scattered burro population in all but its eastern and northeastern portions. The other states listed have only a few scattered bands, remnants of what were once much greater numbers.

TABLE 1

DISTRIBUTION OF FERAL BURROS BY STATES, 1957*

State	*Estimate*	*State*	*Estimate*	*State*	*Estimate*
California	2,000- 5,500	Utah	50- 150	Oregon	25- 50
Arizona	2,000- 4,000	Idaho	50- 100	Texas	25- 50
Nevada	700- 1,500	Colorado	50- 100		
New Mexico	500- 900	Wyoming	25- 75	TOTAL	5,500-13,000

* Based on mail survey and field estimates.

The principal concentrations of wild burros occur either along or near the Colorado River between Utah and the Mexican border or in various desert mountain ranges in southeastern California. The two areas of particular density are in and near the Grand Canyon of the Colorado and in the Death Valley-Panamint Valley-Saline Valley region of California's Inyo and Kern Counties.

[4] A reasonably exact census of feral burros is impossible, due largely to the fact that their presence is rarely recorded with any regularity. Altho people concerned with wildlife management frequently make counts or estimates of the numbers of various native quadrupeds, such as deer, elk, mountain sheep, or antelope, little interest has been shown in doing this for the resident burro populations. Of the ten states that claim even a few wild burros, only in California has there been any real effort to make census estimates. In order to make a start at filling in the gaps of knowledge concerning burro numbers and distribution, the writer sent some 400 letters to people in the western states who are acquainted with the range lands where burros might be found. This survey was supplemented by field interviews and observations in portions of the three states where the burro population is greatest.

DISTRIBUTION OF FERAL BURROS, UNITED STATES
1957

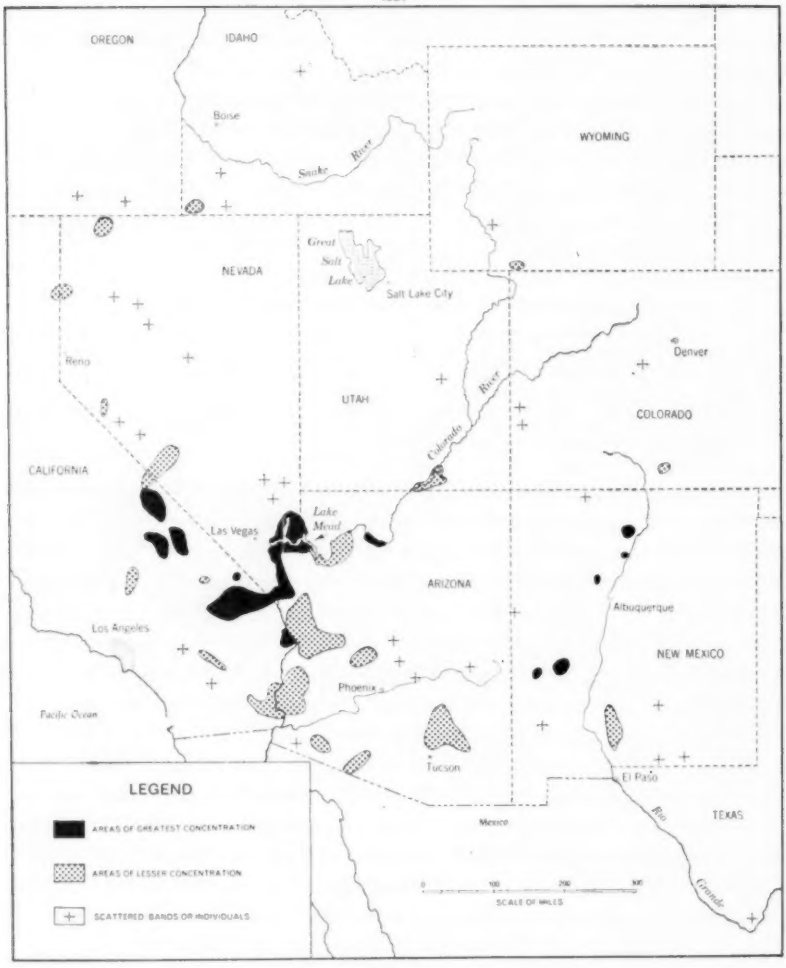

Fig. 1.

Adaptability

In spite of the harsh environment of its adopted American habitat, the feral burro apparently prospers wherever he is left to his own devices. Adaptability is an important characteristic. Rugged terrain, unsure footing, tremendous temperature extremes, scanty

and varied forage, and a limited water supply comprise the birthright of herbivorous animals in the American Southwest.[5] These handicaps seem to have no particularly adverse effects on this hardy ass whose ancestors flourished in the Somali and Nubian Deserts, as well as in the Ethiopian Highlands.

Tho there are certain basic environmental similarities in the various regions where burros are found in this country, there are differences as well. Existence in the Chocolate Mountains of southeastern California is certainly not the same as existence in Owyhee Canyon of southern Idaho or the Red Desert of southwestern Wyoming, yet burros are able to maintain themselves with equal vigor in all three localities.

Survival of ungulates in arid lands depends largely on four critical factors: water, food, predators, and man. (1) Water. Altho the burro is no camel, its watering needs are fairly simple. If the occasion demands, it may dig to a depth of several feet in an arroyo seeking (and usually finding) moisture. During the scorching summers, burros rarely wander more than five or six miles from a watering place. (2) Food. It is in the utilization of desert flora that the burro best shows its adaptability. Almost anything that grows can and will be eaten by the burro to sustain life. There have even been unconfirmed reports of burros feeding on creosote bush, which is practically rock-bottom on the scale of palatability (Fig. 2). (3) Predators. In most places where burros exist in the United States, there are no predators capable of preying on them.[6] Man's continual harassment of wolves and mountain lions has practically eliminated them over most of their former range. Altho coyotes, bobcats, and eagles may on occasion take a young or enfeebled burro, such predation is so rare as to be considered negligible. (4) Man. Man, on the other hand, is the dominant control factor on the burro population. Man brought burros to North America, and it is probably within man's capability to exterminate them. This point is more properly discussed elsewhere.

Competition

The major problem associated with the presence of feral burros in the United States is one of competition for food and water with

[5] Lloyd G. Ingles, *Mammals of California and Its Coastal Waters*, Stanford University Press, Stanford, 1954, p. 278.

[6] Philip Ferry, *op. cit.*, p. 20.

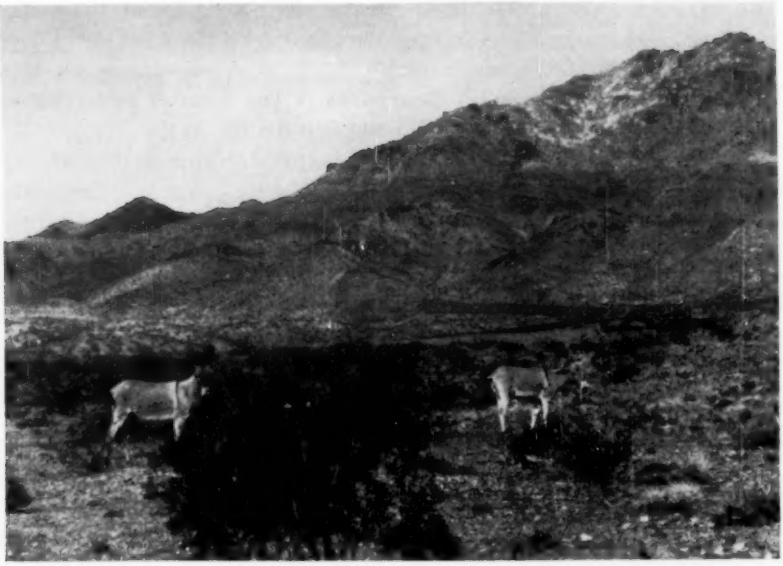

FIG. 2. Feral burros on range dominated by creosote bush in southern Nevada. Photo courtesy U.S. National Park Service.

other animals, both wild and domestic. Every mouthful of grass, etc., that is eaten by a burro represents that much grass, etc., that will not go to nourish some other animal. There is considerable overlapping of the ranges of feral burros and desert mountain sheep. Where such overlap occurs, competition between the two for forage and water is intense.[7] In other areas the burro habitat coincides with that of pronghorn antelope or desert mule deer, providing similar competition. The crux of the problem is that the burro is an introduced exotic, and it is illogical to allow such an exotic to prosper at the expense of native species.

The matter is further complicated by two unpleasant habits of the burro. Burros in general are wasteful foragers and disorderly water-users. Not content with simply plucking mouthfuls from plants here and there, the burro is likely to pull the plant up by the roots, eat only a part, and drop the rest to wither on the ground.

[7] Edmund C. Jaeger, *Our Desert Neighbors*, Stanford University Press, Stanford. 1950, p. 35.

At waterholes, burros commonly roil the water with excessive pawing and befoul it with their excreta.[8]

Where such competition is between burros and the native fauna, it disturbs wildlife management personnel, but where it is between burros and domestic livestock, it stirs up wrath among the ranchers. In many areas burros range in country that is too rough or too poor in forage value to be utilized by commercial grazers, but in other localities the burro shares the range with domestic cattle, sheep, and horses. Frequently the rancher works diligently to eliminate burros from such ranges.

As a result of persistent shooting in many parts of the West, the burro population has been reduced considerably in the past several decades.[9] Altho there are no statistics to indicate the amount of the reduction (except in scattered instances), it is certain to have been tremendous in scope. There are records of ranchers killing as many as one-hundred burros per year for several years in the recent past. New Mexico is an example of a state that had a considerable burro population thirty years ago, but so many have been killed or captured that they are now rare or completely absent from most parts of the state. In addition, government personnel, both federal and state, have been constrained to reduce burro concentrations in many areas to ease the competition.

At the present time, California is the only state in which burros are protected by law.[10] The law was passed at the behest of humane societies and other interested organizations and individuals after the discovery that burros were being shot wantonly in some desert areas, for no reason other than target practice. The effect of this law, however, largely has been detrimental, as there is no longer a legal way to protect the native wildlife and domestic stock from burro competition.

Outlook

The future of the wild burro in the United States is conjectural. Extermination will doubtless occur in portions of its present range, just as it has in the past. On the other hand, extermination would be very difficult in many areas, due to inaccessibility. A variety of

[8] Joseph S. Dixon and E. L. Sumner, Jr., "A Survey of Desert Bighorn in Death Valley National Monument, Summer, 1938," *California Fish and Game*, April, 1939, p. 83.

[9] Will C. Barnes, "Wild Burros," *American Forests and Forest Life*, October, 1930, p. 641.

[10] See *California Fish and Game Code*, Section 1403.

suggestions have been made as to the proper method of managing the species, ranging from the establishment of one or more burro sanctuaries, to declaring the burro a game animal the same as deer, to advocacy of complete extermination. None of the suggestions have met with overwhelming enthusiasm.

It is probable that both state and federal conservation agencies will pay more attention to the wild burro in the future than they have in the past. Like it or not, the burro is now a resident member of the fauna of ten states, and will likely remain so for some time in at least three of them. It is merely the sensible course to recognize this presence and make every effort to learn more about the wild burro, in order to be qualified to plan its management.

WORLD GEOGRAPHY VIA TV

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College students do at least as well in geography when taking the course by television. That is the conclusion of a controlled experiment conducted during the first semester 1956-57 by Morris Harvey College and WCHS-TV, both of Charleston, W.Va.

When the station and the college embarked on their joint venture of teaching by television in the fall of 1954, World Geography was the first course to be offered. This decision was made for a number of reasons, paramount among which were the availability of a great amount of simple visual materials and the public interest in things geographic because of the various spots of world tensions. The reception of that first course was gratifying to both the college and WCHS-TV. Seventy-one persons registered for credit, and the reaction of the general public was even better than anticipated.

The course in World Geography was offered again in the fall of 1956, this time as a controlled experiment to test the effectiveness of teaching by television. As nearly as possible, conditions were kept the same in the campus section and the class on the air. The same teacher was used, the sequence of the discussions was maintained in both sections, the same basic text was adopted for both classes, and a comprehensive examination was given at the end of the course.

At best, however, there were some differences which could not be avoided. The campus class was composed of regular college students, while the television section was made up mostly of school teachers who were renewing certificates, and part time students who work in the Charleston area. The campus section had ready access to the libraries in the metropolitan area, whereas the television students were widely scattered over the station's coverage area. To equalize this somewhat the television students were required to buy an additional text, but it was still impossible to keep the collateral reading completely similar.

One thing should be noted here concerning preparation for a television lesson. It is necessary to plan rather carefully so that full use of the limited air time can be made. One of the main considerations is collecting visual material and getting it coordinated with the text of the lesson. It is also necessary to make an outline of what is going to be done at particular times so that the director will know what to expect. At the beginning of the course the teachers will probably have to schedule a rehearsal a day or two before the telecast, but as the course proceeds and the director and instructor begin to know what to expect, a brief "talk-thru" preceding the program is all that is necessary. It is the concensus of those who have taught via TV, at Morris Harvey College, that it takes approximately twice as long to prepare a television lesson as it does one for a regular campus class.

The two textbooks used in World Geography via Television Classroom in 1956-57 were Durand's *World Geography,* and Kish et al *An Introduction to World Geography.* Durand's approach is to consider life in certain types of terrain or climatic zones, while Kish presents a description of the world from a regional standpoint. Thus the two texts provided the students with different points of view.

The lessons were presented in such a way as to take advantage of both points of view. The first five telecasts dealt with global problems such as prevailing conditions, climates, maps and their interpretation, and the distribution of resources. The remaining eleven lessons were regional in character. Beginning with North America the series then moved thru South America, Africa, the Near East, India and Pakistan, the Far East (two sessions), the Soviet Union, Europe, the concept of the World Island, and the United States in World Affairs. The global concept was emphasized thruout

the course, with particular attention being paid to the relationship of the United States to the various areas or climatic zones being discussed.

The lesson on the World Island would be a good one to use here as an illustration of how a television session has to be planned. Here is a copy of the idea and work sheet given the director:

THE WORLD ISLAND

1. What is the World Island?

Instructor stands in front of large wall map centered on the prime meridian. With pointer, will discuss unity of Europe, Asia, and Africa.

2. Comparison with North and South America.

Instructor walks to easel with series of charts. Will use pointer and stand close to easel. When chart is to be removed to make the next one available, instructor will step away from easel and continue talking. Charts in order show comparisons of land area, population, and resources.

3. How was Britain able to maintain its position of dominance for so long?

Back to wall map with pointer to show favorable position of British Isles for dominating European trade. Then to Mediterranean area to show how Southern Europe could be "bottled up" at Gibraltar and Suez. Discussion of Britain's lifeline and German threats in both World Wars will follow.

4. What is the significance of the World Island today?

Instructor goes to table top to show small map of Mackinder's theory about the Heartland. Then to globe to show space relationships between North America and the World Island. Discussion will be paced to allow the placing of white masking tape to show the straight line routes from the United States to Europe and Far East. Class ends with instructor in front of polar projection pointing out Russia's dominant geographic position on the World Island.

Thirty-six students were registered for the campus class, and one hundred fifty-one signed for the Television Classroom section. The campus class met Monday-Wednesday-Friday from 8:00 to 9:00 A.M. The television classes were presented Saturday afternoons 5:30 until 6:00, and those registered for credit were required to come to the campus for two three-hour sessions on Sundays, and for a two-hour examination on the final Saturday evening of the course.

The final examination was composed of one-hundred objective questions and was specifically designed to give a complete picture of the classes, by making a perfect score practically impossible. The results were most interesting. The range of scores in the television section was 29 to 82; in the campus section the range was 30 to 88. The mean for the TV class was 60.85, and for the campus group 58.95. The television section standard deviation was 11.8, and that of the campus class was 14.1.

Thus, the statistics show there was no significant difference between the two groups in achievement. The television section did slightly better, but not enough to draw any radical conclusions. However, the experiment did prove that World Geography could be taught by television at least as well as on campus. That in itself is a significant revelation.

Television is an admirable medium for presenting such a course as World Geography. The visual aids are shown in such a way that they are not distant objects, charts, or maps hanging on the wall twenty or more feet from the student. The TV camera brings the student in such close contact with them that everyone has a front row seat—and then some.

Not only was the course in World Geography an interesting one for the students and the instructor, it was also valuable for the general listening public. Reactions to the broadcasts were very good, indeed, and altho the station is anxious to advance the idea of teaching via television, it is also quite interested in having programs on the air which appeal to a wide segment of the public. World Geography did this. In fact, one fan letter suggested that the course be made "required viewing" for all candidates for Congress in the 1956 election.

INDUSTRIALIZATION: PANACEA FOR LATIN AMERICA?

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Stanford University

"Industrialization is a sacred subject here," a U.S. businessman recently wrote from Argentina. "It is almost as unthinkable to criticize a proposed steel mill as it would be to attack the institution of motherhood." With little variation, the comment could describe the prevailing sentiment in many of the other Latin American republics. What accounts for the fervent desire to industrialize that grips these lands to the south? What do they hope to gain by revolutionizing their economies in this manner, and what is their outlook for success?

Why Latin Americans Want to Industrialize

To answer these questions, one must first realize that most of the Latin American people suffer from biting poverty—they are miserably fed, clothed, and housed. Disease is rampant, infant mortality is high, and average life expectancy is on the order of 35 years, as opposed to 68 in the United States. It is not unusual in the Peruvian Sierra to see Quechua Indians plodding several miles with 150-pound sacks of potatoes on their backs because men are regarded as more expendable than donkeys or mules or llamas.

For centuries the majority of Latin Americans have placidly accepted their unhappy lot, but today improved communications have made them keenly aware of so-called Western standards. Because they no longer believe that hunger, disease, and premature death are inevitable, these people are experiencing a violent "revolution of expectations." Furthermore, they are demanding action to fulfill their newfound expectations! In view of the growing popular ferment, it is not surprising that Latin American political leaders feel compelled to prescribe a potent remedy for economic ills. A closer look at problems common to many of the Latin American nations will suggest why industrialization has been hailed as the panacea.

Not a single one of the twenty Latin American republics is commonly ranked as a developed country by economists and other social scientists, and only five of the nations (Argentina, Chile, Cuba, Uruguay, and Venezuela) are classified as semi-developed. Specifically, this means that in the fifteen underdeveloped countries the average per capita annual income is less than $150 (it is only $40 in Haiti), the population consumes less than 2,500 calories per person per day on the average, and only one-twentieth as much mechanical energy is consumed per capita as in the advanced industrial nations. Standards are relatively higher in the five semi-developed countries but still far below those of the United States and northwestern Europe.

The reasons for these bleak conditions are essentially different for each country and must be sought in its own natural environment, culture, and history, but there is a unifying characteristic that predisposes the Latin American nations to choose a similar solution for their economic difficulties: nearly every one of these countries is overwhelmingly agricultural. In most of the republics,

three-fifths of the total population is engaged in farming, and only one-tenth is employed in factories.

Since agriculture obviously has failed to create high living standards in Latin America, and since industrialization has been conspicuously successful in the United States and other developed countries, many Latin American political leaders have turned toward industrialization as the only possible avenue to prosperity. Their preference for this solution is frequently strengthened by other considerations, such as the desire to prevent wartime shortages of manufactured goods, the belief that no country is truly "free" until it is economically self-sufficient, and the idea that national prestige is greatly enhanced thru "conspicuous production." In their hopefulness, however, many leaders tend to overlook the fact that industrialization in the United States and northwestern Europe proceeded from very different bases, amidst historical circumstances that are not duplicated in Latin America today. They seem not to recognize, for example, that among the prerequisites for successful industrialization is assurance of an adequate food supply for the population.

Population Outstripping Food Production

Notwithstanding its predominantely agricultural way of life, Latin America produces so little food per capita that it is no exaggeration to state that, if the present trend continues, millions of Latin Americans will go from birth to death without ever having enough to eat. A combination of reasons is responsible for this paradox. For one thing, there is a scarcity of good farming land in Latin America, in spite of its vast expanses. Because of deserts, mountains, high tablelands, selvas, jungles, savannas, and remoteness, only 5 per cent of the land is considered arable, compared with 10 per cent for the whole world and 25 per cent for the United States. (The average ratio of farmers to farm land in Latin America is more than three times as high as in the developed countries of the world.) Many farmers must therefore eke out a precarious living from submarginal lands, but even those who work better lands often get low yields because of antiquated methods. Efforts are being made to introduce new equipment and to modernize procedures, but resistance to change is strong in many areas, especially in the predominantly Indian countries where the farmers prefer to do things as their ancestors did and look with suspicion

upon the innovations of the white man. But a scarcity of arable land and antiquated farming techniques would not be desperate concerns if the population pressure upon the land were not so great. Unfortunately, the population is growing so fast in Latin America that production gains are nullified as fast as they are made. It is actually a case of having to run furiously to stay in the same place, for nowhere on the face of the globe is the human race multiplying so rapidly as in Latin America. In virtually every one of the twenty countries, the population is expected to double in 20 to 40 years. Mexico will probably double in 22 years, Venezuela in 23, Brazil and Argentina in 30, Peru in 36, and so on. Agronomists have already noted that food production per capita in Latin America is now below the pre-World War II level, in spite of over-all production increases.

It is sometimes argued that one way to increase agricultural production in the long run is to force industrialization ahead sufficiently to provide the necessary implements and technological support for farming, but the creation of a modest feedback between industry and agriculture is not what most Latin American leaders have in mind when they advocate industrialization. To them, as to most Western economists, the term implies far more: it connotes the formation of an advanced economy based on large-scale manufacturing with power tools, large capital investment, and sophisticated technology and organization. In some of the countries, the industrialization programs even call for heavy industry, i.e., integrated steel plants, and the manufacture of capital goods. To undertakings of such magnitude, the food problem, considered in relation to the impending "population explosion," must remain a major obstacle.

The Bases of Industrialization

Aside from an adequate supply of food, which is after all a requirement for survival itself, what are the bases for industrial development? Generally, they include the following: (1) raw materials, (2) fuel and power, (3) industrial water, (4) skilled labor, (5) capital, (6) markets, and (7) transportation. These elements must be present in sufficient quality and quantity and concentrated so as to promote economical operation. Less important but nevertheless desirable conditions for industrial development are reasonable taxes, room for expansion, areas for disposal of waste, and favorable climate. When the government controls industrial devel-

opment or lends substantial support, as it frequently does in Latin America, some of the above requirements are less stringent or even less relevant, altho most of them cannot be ignored if industrial parasitism is to be avoided.

Latin America with Respect to the Bases of Industrialization

Each country in Latin America is unique insofar as its industrial potential is concerned, but certain observations on this topic have wide application. For example, while Latin America as a whole has minerals aplenty, it is not the vast reservoir of untouched mineral wealth that so many people believe it to be. Iron ore, the key raw material of contemporary civilization, is fortunately available in many countries, but it is not always the most desirable grade, and deposits frequently are not located to best advantage. The most serious mineral deficiency, however, is a scarcity of high-grade coking coal, which is still the basic fuel of the steel industry. Scientists are now trying to by-pass the coal-burning blast furnace, which dates back to the fourteenth century and has changed very little since then, but until technology provides a workable and economical substitute, heavy industry in Latin America cannot go far. On other counts as well, the region is handicapped. An overwhelming proportion of the inhabitants have an agricultural and pastoral heritage and have not had the basic education or technical training to qualify them as skilled labor. Investment capital is chronically short, especially in the amounts needed for the more ambitious undertakings (it costs $300 to $500 millions to build an integrated steel plant), and attempts to finance industrial development are not always successful. Domestic markets for manufactured goods in Latin America are often too small and specialized for economical production, giving rise to a circularity in which "costs and prices are high because the market is small, and the market is small because costs and prices are high." Poor transportation, it is generally agreed, is a major stumbling block to economic development of any kind in Latin America.

With such limitations, how is industrialization progressing south of the Rio Grande?

The Present State of Industrialization in Latin America

Development is in the early stages all the way to Cape Horn, but, as might be expected, the pace of manufacturing is not uniform. Argentina, Brazil, Chile, Mexico, and Venezuela are advanc-

ing most rapidly, with increased activity in all twenty nations. Food and textiles comprise 60-75 per cent of the output; however, light industry of many other types has been established and seven countries have launched integrated iron and steel projects. In semi-developed Chile, where the Huachipato steel mill rests on a comparatively firm geographical and economic base, industrialization is perhaps proceeding most constructively, yet even there the over-all economic problems of the country are too complex for solution thru this means alone.

Examples of Too Rapid Industrialization

At least three nations classified as underdeveloped—Brazil, Mexico, and Colombia—moved far too fast along the road to industrialization. Following World War II, Brazil spent an amount equal to its total available foreign exchange plus $1 billion for machine tools, electric generators, and various types of machinery and heavy equipment. The national economy swiftly became lopsided—heavy on manufacturing and light on agriculture—and Brazil is paying for its folly today.

Mexico also borrowed capital to speed up industrialization, under exhortations such as the following from an Alemán cabinet minister:

> We must industrialize; we will starve if we don't. The simple truth is that only some 14 per cent of Mexico is suitable for farming, even if we irrigate to the maximum.

Manufacturing was vigorously pushed forward, but what the Mexican Government apparently failed to realize was the importance of the market factor. Seventy per cent of the Mexican population is composed of farmers with almost no purchasing power; they were simply unable to buy what the factories turned out. In his illuminating and well reasoned study of the Mexican economy, Sanford Mosk concluded that high agricultural productivity was a prime requisite for industrialization: "The Mexican farmer will not be a better buyer until he is a better producer." The present government is now stressing agriculture and other activities, tho not neglecting manufacturing.

The experience in Colombia involved the construction of an integrated steel plant at Paz del Río. In spite of expert advice from a mission of the International Bank for Reconstruction and Development, Colombia built the installation in 1954 at a cost of approximately $125 million, much of which was borrowed from

French sources. After more than two years of halting operation, the installation has not only failed to meet any appreciable part of the Colombian demand for steel, but it also badly needs another $50 million to keep afloat. Moreover, in order to protect Paz del Río, the Colombian Government has driven the price of imported steel up approximately 30 per cent. Among the factors retarding the Colombian steel project have been insufficient skilled labor, poor equipment, a small and specialized market, and other economic and geographic disadvantages. The story of Paz del Río dramatically illustrates the disastrous financial consequences of initiating heavy industry in an underdeveloped country. Further examples abound of Latin American industrial projects which have failed to satisfy primary economic requirements, such as making a profit, increasing the national product, or lowering the level of foreign payments.

No Single Solution for Latin America's Economic Ills

The problem of raising living standards in Latin America, and other less developed regions, is one of the most difficult in the world today, but sufficient evidence has accumulated to indicate that industrialization alone is not the answer. If other aspects of the national economies are not developed and strengthened concurrently, industrialization can easily boomerang. The danger is not only that unsuitable industries may fail or become parasites on the rest of the economy, but also that they may divert trained personnel, capital, and other resources from activities which might be more likely to promote over-all development. In many instances, funds invested in agriculture, mining, transportation, commerce, power, health, or education, would probably produce far greater benefits than money spent on manufacturing. This is not to say, however, that emphasis in any single one of these directions is itself the panacea.

It is psychologically revealing that the search for a cure-all for the economic ills of Latin America does not stop with industrialization and other economic activities. The gamut of proposed remedies ranges all the way from foreign financial and technical aid to birth control. U. S. assistance has indeed made significant inroads in Latin America, but only the most enthusiastic supporters would claim that exports of wealth and technical skill could or should be expedited in the quantities needed to transform underdeveloped lands in the space of a few decades. This is a process that could

take a century or more. Birth control might alleviate the economic problems of the masses in Latin America—might even prevent future famine and disaster—but few thoughtful people view it *per se* as a builder of progressive economies. In any event, the chances of widespread acceptance of birth control techniques in Latin America appear slight at this time because of the religious and cultural traditions of the majority of the population.

Conclusion

To countries which are impatient for results and envisage great gains from one or possibly two five-year plans, it may be slight comfort to counsel a policy of balanced development, yet that is the conclusion to which one is forced by examination of the situation. The major elements of a nation's economy are differentiated to a greater extent in discourse than in practice; they normally advance together or not at all. This is especially clear in the case of heavy industry, which has little chance of succeeding in underdeveloped countries because it is not supported by the rest of the complex.

The problem of how to determine what constitutes balanced development is the next consideration, once the quest for a panacea has been abandoned. Suffice it to say here that new techniques in economic quantitative analysis offer bright promise in this area. With improved procedures and electronic equipment, it is now possible to combine economic data and test proposed solutions far more comprehensively and rapidly than in the past.

Eclipsing problems of methodology, however, is the need for Latin Americans, and citizens of other less developed areas, to appraise their potentialities dispassionately and to define their courses of action undeluded by the glamour of industrialization or any other single remedy.

Do you have your hotel reservation for the
Annual Meeting, National Council for Geographic Education
St. Louis, Missouri, Jefferson Hotel, November 28-29, 1957?

Preliminary Program for the Annual Meeting appears on
Page 291 of the September, 1957 issue of the Journal of Geography

ECONOMIC-GEOGRAPHIC PHILOSOPHY BEHIND THE PROPOSED ASWAN VALLEY PROJECT IN EGYPT

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Purpose of This Study

There have been many plans for regional development in the past and it is very likely that there may be many in the future. In this paper an attempt has been made to describe one of these proposed developments, to discuss its potential influence on the region's economy, and to evaluate its significance in terms of conservation of the natural resources of the region.

As an example of regional development, the Aswan Development Scheme, which is a part of a plan for harnessing the Nile River in Egypt, has been chosen for discussion. It is not the purpose of this critique to involve the writer or the reader in any of the controversial political, diplomatic and international issues that may have a bearing upon the building of the proposed dam. No comment has been made concerning the problems that precipitated the heated Suez Canal question. Instead, the writer has attempted to weave together a treatise which will focus attention upon the possible economic-geographic effects that the proposed dam may have on the well-being of millions of peoples in one area of the Middle East.

The Nile, A Life-Saver

Nowhere in the world do people depend for their very existence on a river as the people of the Nile basin depend upon the Nile. No country in the world is so indebted for the fertility of its soil to a river as Egypt is indebted to the Nile. Egypt and the Sudan owe their life and existence to this great river.[1] Farming is basic to Egypt, and to improve the farm land is the first reason for building the Aswan Dam that will regulate the flow of the life stream. But any vast flow of water, such as the Nile's, can also become a vast source of power. Just as the energy of coal mined around Pittsburgh fathered the American steel industry, so can

[1] Abbas Ammar, "Physical, Ethnological, Cultural and Economic Bases of the Unity," *The Unity of the Nile Valley*, p. 9.

the energy of the Nile, harnessed, provide energy to turn the wheels of production so needed in Egypt.[2]

The huge dam on the Nile River at Aswan can be used to store part of the annual floods to irrigate crops from February thru July. Between February and July, the river's natural overflow is not enough to support Egypt's present agriculture and the shortages can be made up by the release of water stored, in the flood time, at Aswan and other points. In later summer, when rains in central Africa flood the Nile and sometimes do great damage, part of the surplus can be caught in reservoirs and stored for the following dry season. It is believed that the capacity of existing dams is inadequate to protect present farms completely against a series of dry years.

Today the rich top soil the river deposits annually over the flat lands provide one magnificent crop a year of whatever is grown, cotton for export and food for the farmer's family. But every year there are more mouths to feed from the same limited acreage. Egypt's population is growing so fast that the Nile River must be used to water millions more acres to prevent future famines like those in Joseph's time. Officials estimate that by 1980, there will be a population of 25,000,000 as compared to 19,000,000 in 1948. Reduction of the infant mortality rate might raise the number higher. So a proposal has been made to "tame the Nile" and widen the fertile valley to supply more people better, with less backbreaking labor, since Egypt's main resource is the rich farmland that borders the Nile on its long course thru the desert.

Economic-Geographic Philosophy

The economic-geographic philosophy behind the Aswan, and other projects, in Egypt is to build the country's economy on a solid foundation by raising the standard of living of the masses of the people. For its economic development, Egypt depends on the extension of cultivatable areas. The reclamation of barren lands is possible if an adequate supply of water for irrigation purposes is made available. Some persons believe that this result can only be achieved by the execution of projects, such as the Aswan Development Scheme, destined to control the water of the Nile and increase the volume of water stored during the flood season.

The High Dam at Aswan can create the largest man-made lake

[2] *The Arab World*, October, 1955, p. 5.

in the world, stretching nearly 150 miles back into the Sudan. It can add more than a million acres of arable land to Egypt's total and turn 700,000 acres of sometimes irrigated soil to perennially irrigated land for farming. The country's agricultural production can be increased more than one-third. Presently, out of an area of about 400,000 square miles, only 5 per cent is cultivated. The rest is desert and stony waste land.[3]

The Prime Minister[4] of Egypt emphasized that the largest plant in the government's blueprints will be the creation of a fertilizer factory at Aswan by 1958. It will cost about $72 million and will produce 375,000 tons of calcium nitrates annually. It is expected that the factory will provide more than 60 per cent of the fertilizer requirements of the Nile Kingdom. During the flood season rich silt compensates for some deficiency in the fertilizing elements. However, Egyptian agriculture stands in need of nitrates and potassium, both lacking in the Nile silt.[5] For more than 1,000 miles down stream from the dam there are 16 million farmers whose lot will be improved. In addition to fertilizer the factory can produce dyes and essential chemicals suitable for other industrial needs.

Near the site at Aswan are rich iron deposits that are estimated to be sufficient for Egypt's needs for more than five hundred years if a steel industry were built.[6]

Previously, it had been estimated that the dam would permit generation of a constant electric power of 2,000,000 kilowatts, which in turn would make possible the manufacture of 2,000,000 tons of fertilizer and 500,000 tons of steel per year. However, a recent issue of *Time* Magazine stated that:

> The most important single development project in the world today is the proposed high dam spanning the Nile at Aswan. The 15-year, $1.3 billion project will have 1,440,000 kw. of power capacity and increase Egypt's electric supply eightfold.[7]

At any rate the utilization of the Aswan Dam on the upper Nile as a source of hydro-electric power can be useful for giving the hydro-electric pumps the necessary motive power for a thoro irrigation of the land.[8]

[3] *The Arab World*, October, 1955, p. 2.
[4] Gamal Abdel Nasser, *The Egyptian Revolution* (Reprinted from Foreign Affairs in a Quarterly Review), January, 1955, p. 206.
[5] Abbas Ammar, *op. cit.*, p. 10.
[6] *The Arab World*, October, 1955, p. 5.
[7] June 25, 1956, p. 79.
[8] *The Arab World*, March, 1955, p. 6.

Former Prime Minister Mohammed Neguib[9] saw the advantages of making more water available thruout the Nile in order to outpace the population growth. The present prime minister of Egypt, Gamal Abdul Nasser,[10] said: "Everyone of you (Farmers of Egypt) will always be a master and not a slave" and then he handed deeds to hundreds of peasants who thereby acquired title to lands. This was a part of the redistribution of land authorized under the Agrarian Reform Laws of September 9, 1952, by which estates of large land owners, bought by the Egyptian government, were given to the people. Two hundred thousand acres have so far been distributed. Obviously, we can see the importance of the Aswan Dam and other projects to help these new small landowners.

The law limiting landowners to 200 acres each is laudable in its intent, since its objective is to distribute the land, in excess of that figure, to the land-hungry farmers. Ordinarily, a large landowner can and does afford better management, better machinery and better exploitation of the land than the small disease-ridden and ignorant peasant, who has to eke a living out of one or two acres that have been allocated to him for use. "Moreover, even the 2 million acres, which will become available when the High Dam (at Aswan) is finished, will not keep pace with the increase of the population."[11] So there will be a need for more dams. Several new irrigation schemes are now under study to improve still further the distribution of water and extend agriculture.

Presently the work in progress consists largely of taking borings and soundings of the rock and earth on which will rest this three-mile long structure.[12] The Aswan Dam is scheduled not to be an ordinary dam. It will be larger than the Boulder Dam in the United States. As we know, the Boulder Dam is presently the highest in the world. "It rises 727 feet above bedrock and its construction required 4,400,000 cubic yards of concrete, about the same cubic yardage to build a pyramid in Egypt. It took about 100,000 men twenty years to build a pyramid, but only 1,000 men twenty months to pour Boulder's concrete."[13] It is well ascertained that, if the Aswan Dam is completed, it will be the largest structure in

[9] *Egypt's Destiny*, pp. 167-168.
[10] "Egypt—Land for the Tillers," *The Arab World*, July, 1955, p. 6.
[11] Frances A. Kettanels, *Middle East Report*, Vol. VII, May 31, 1955, p. 18.
[12] "Land East," *The Near and Middle East Magazine*, February, 1956, p. 7.
[13] J. Russell Smith, *North America*, p. 597.

the world and will serve as a token to new economic developments taking place in historic Egypt along the Nile.

Summary

The Sadd Eli Ali (High Dam) is a scheme for harnessing the Nile River at Aswan. This dam is supposed to insure the storage of 70 billion meters of water, thus guaranteeing the discharge of 60 billion cubic meters required yearly for irrigation and compensating, as well, for any deficiency incurred by low floods. Since an acre of land required 8,000 cubic meters of water yearly, it is hoped that if this dam is built, it will be possible to expand the cultivative area in Egypt by roughly 2 million acres to a total of 7½ million acres and convert basin irrigation in upper Egypt to perennial irrigation.[14] The Aswan Dam and the projects attached to it may also:

1. Protect the country against the damage of high floods and the necessity of raising and strengthening the existing embarkments along the Nile. Egypt, with 95 per cent of its land unsuitable for cultivation needs to look to the desert and the Nile for a greater source of income.
2. Permit the installation of powerful hydro-electric generating plants capable of producing 10 billion kilowatt hours per year. The building of a power plant is necessary to utilize whatever iron and other minerals may be found in upper Egypt. The Hydro-electric plant at Aswan could increase the country's power capacity about 200 per cent.
3. Permit expansion of the fertilizer industry to produce about 500,000 tons of fertilizer per year. The artificial fertilizer can be made from air, limestone and Nile water at a plant operated from the hydro-electric plant. The fertilizer plant alone could employ more than seven hundred persons.
4. Help relieve the population pressure for agricultural land of this heavily overpopulated country. Egypt's population is growing faster than any scheme for making available more land to the farmers. Yet, the Aswan project is a step in the right direction.

Many persons will be gainfully employed because of these enterprises in mining, fertilizer production, hydro-electric power production, transporting and selling of farm products and raw materials. One gratifying fact is that the establishment of "secondary" industries may be possible. Ultimately, the cumulative effect of the Aswan Development Scheme on the economy of Egypt as a whole can be great. An increased national income and an expanding industrial capacity could usher in a new era for Egypt.

[14] Frances A. Kettanels, *op. cit.*, p. 18.

CLOUDS AID IN LEARNING WEATHER

DONALD H. LOKKE
University of Kansas, Lawrence, Kansas

There is a continual search for aids to learning in the classroom. To convey an idea or concept we often employ a model or an exercise involving actual use of material. In studying weather a student may have difficulty in comprehending the magnitude of the processes going on about him; the cyclone model presented by William E. Thomson[1] helps fill this need. We also may use clouds as full-scale models to illustrate atmospheric conditions. Visual observations on form, height, and movement of cloud systems help in understanding the general make-up and position of air masses. The inexpensive chart[2] and manual[3] on clouds published by the Government Printing Office will aid in identifying clouds. In areas where newspapers supply daily weather maps the students can check forecasts and positions of frontal systems by noting arrival times of cloud types. With the present-day addition of the television weatherman there is an added incentive to follow the weather.

The ideal warm-front or cold-front cloud systems are not always borne out by observation, but variations may be noted and reasons sought for their differences. A high degree of interest in any student group can be created by combining a careful watch on clouds, the flagpole, and the barometer. The extent to which clouds are used as an aid to learning weather can be varied according to the objectives of the course and ages of students in the group. Studies of clouds and their relation to other weather elements give the student a personal experience with a dynamic process. This activity will encourage keen powers of observation and instill a desire for a more detailed knowledge of the atmosphere.

[1] William E. Thomson, "Construction of a Simple Cyclone Storm Model," JOURNAL OF GEOGRAPHY, 53 (May 1954), pp. 208-211.

[2] United States Weather Bureau, *Cloud Code Chart*, U. S. Government Printing Office, Washington 1949.

[3] United States Weather Bureau, *Manual of Cloud Forms and Codes for States of the Sky*, Circular S, 2nd edition, U. S. Government Printing Office, Washington 1949, pp. 1-43.

Are you going to St. Louis to the meeting?

THE NATIONAL COUNCIL AT WORK

The final details for the annual meeting of the National Council for Geographic Education which convenes in St. Louis, November 29-30 are now completed. An abridged copy of the program appeared in the September issue of the JOURNAL OF GEOGRAPHY.

The program will provide interesting papers for all levels of instruction from the elementary grades thru college. Of special interest are the sectional meetings, and members and non-members are invited to enter into the discussion at these sessions.

A great many people have contributed to the building of this program, and the President is truly grateful for all these efforts. To the Local Committee on Arrangements special recognition is herewith made.

The Nominating Committee has submitted the following list of qualified candidates to fill the various offices during the coming year. Members who have been in good standing for the five consecutive years are eligible to hold office. The Nominating Committee, Ralph E. Olson, Chairman, Alfred H. Meyer, and M. Melvina Svec present the following candidates:

President: Mary Viola Phillips, University of Pittsburgh, Pittsburgh, Pennsylvania.

First Vice-President: Adelbert K. Botts, State Teachers College, Trenton, New Jersey.

Second Vice-President: Lorren G. Kennamer, Jr., University of Texas, Austin, Texas.

Treasurer: John H. Garland, University of Illinois, Urbana, Illinois.

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George S. Corfield, Nebraska Wesleyan College, Lincoln, Nebraska.

Robert C. Funderburk, Central Washington College of Education, Ellensburg, Washington.

INA CULLOM ROBERTSON, *President*

GEOGRAPHICAL PUBLICATIONS

Paul F. Griffin and Robert N. Young. **California—The New Empire State.** Fearon Publishers, San Francisco, 1957. xviii and 325 pages, with illustrations, maps, tables, references, and index. **$5.50.**

———. **Atlas of California.** Fearon Publishers, San Francisco, 1957. 53 pages. **$1.50.**

The state of California provides an excellent subject for geographic analysis. Its diversity of physical features, climatic conditions, and economic activities gives it a unique place in our country. The developments already on record in California, as well as those in prospect, justify a detailed study.

The purpose of the authors, as set forth in the preface to *California—The New Empire State,* is to analyze (1) the "whole new complex pattern of the interrelations of industry, agriculture, and settlement" which "has been set up" in the state and (2) the factors which gave rise to it.

The organization of the book is based upon the eight easily definable physical

regions of California: the southwestern mountains and valleys, the central coastal mountains and valleys, the San Francisco Bay area, the north coastal mountains and valleys, the northeastern mountains and valleys, the southeastern mountains and valleys, the Sierra Nevada, and the Central Valley.

The book is well illustrated with fifty-three maps and some good photographs. It contains some excellent descriptive writing, such as that on rice culture (page 292) and considerable encyclopedic information, such as that on the Port of Stockton (page 279). Thruout, the quality of the book is marred by poorly written sentences, such as the following: "The growing season is unusually long, since it averages two hundred and fifty-nine days" (page 126). On page 29 there is a confusing use of the word "population" with reference to automobiles.

The defects of *California—The New Empire State* are outweighed by its solid content. It is fair to say that the authors achieve their purpose of dual analysis. Their work is a useful contribution to the geographic literature on the most important of our western states.

The Atlas of California is made up of the fifty-three maps which are contained in *California—The New Empire State*. Included are maps of the following: the eight physical regions of California, the land use patterns of each of these, all the important cultivated crops, average January and July temperatures, average annual precipitation, state and U.S. highways and railroads.

A notable omission in *The Atlas of California* is a map showing population distribution. Maps showing the distribution of sheep and cattle would seem to be desirable, since California ranks high in numbers of both. Reference tables showing the populations of the major cities and the relative sizes and populations of the counties would be helpful.

R. S. FUNDERBURK

Central Washington College of Education
Ellensburg, Washington

Jack B. Graham and Meredith Burrill, editors, **Water for Industry.** American Association for the Advancement of Science, Washington, 1956. 141 pp. with 18 illustrations, references, and index. $3.75 ($3.25 prepaid to AAAS members).

This concise symposium presents the water needs of industry, the major consumer of water today. When it is realized that a new steel plant such as the Fairless Works consumes 230 million gallons per day (about two-thirds the requirements of Philadelphia), it is not surprising that industrial demand is expected to more than double by 1975.

The entire volume is thought-provoking, each idea being supported by pertinent data. Much of the material included is available in standard texts but the papers on the Fairless Works, waste disposal in atomic plants, and on the cleaning up of the Schuylkill River are genuine contributions. In the last paper, J. Russell Whitaker concludes that "Without river and ground water basin management, the most efficient use of water cannot be achieved, nor can adequate supplies for industry be guaranteed for the more remote future."

OTIS P. STARKEY

Indiana University

Melvin E. Kazeck. **North Dakota, A Human and Economic Geography.** North Dakota Institute for Regional Studies, North Dakota Agricultural College, Fargo, North Dakota, 1956. 264 pages with 105 pictures and maps, eighteen tables, three special maps, bibliographies, and index. $4.75.

For one who has lived sixteen years in the Red River Valley of the North, in the Moorhead-Fargo area, this book is welcome. It makes an interesting and worthwhile addition to the list of state geographies which are at last beginning to appear.

Physically, the book appears well, being well bound and printed on high grade slick stock. It is smaller than most current state geographies being 6¼" by 9¼".

This book is well written, being informative and interesting without useless verbiage, and with useful comparisons, i.e., "The wheat acreage in many European countries is less than the 10,000,000 acres grown annually in North Dakota. . . . Hard red spring wheat is the leading crop . . . an average production of 138,000,000 bushels of wheat each year."

The organization is both regional and topical. Such important topics as industry and conservation, being emphasized by separate chapters.

This book will be interesting and useful as a text and reference for high schools and junior colleges, and for general reading. The pictures are numerous and well selected. Most of the maps are good and useful, some could stand improvement. The reference map on page forty is practically useless and should be expanded to full page size.

J. R. SCHWENDEMAN

University of Kentucky

GEOGRAPHICAL PUBLICATIONS RECEIVED

Bernard Acworth. **Bird and Butterfly Mysteries.** Philosophical Library, New York, 1956. 303 pages with contents, illustrations, and index. $7.50.

Study of migration and allied phenomena which involve the flight factor and examination of alleged minds of birds and insects. Explanation and definition of mystery "instinct."

H. H. Swinnerton. **The Earth Beneath Us.** Little, Brown & Company, 34 Beacon Street, Boston 6, Mass. 1956. x and 335 pages with illustrations and index. $5.00.

Age and origin of the earth, birth of mountain ranges, volcanoes, geysers and earthquakes. How rocks, ores and precious stones were formed. Evolution of plants and animals.

Oxford University Press. **The Little Oxford Atlas.** Oxford University Press, Amen House, London, E.C., England. 1956. iii and 60 pages of maps. (9s 6d net)

Countries and continents shown in vivid maps, the relief standing out sharply with a "three-dimensional" effect. New maps of Great Britain are on a large scale.

Carl O. Sauer, Marston Bates, and Lewis Mumford. **Man's Role in Changing the Face of the Earth.** The University of Chicago Press, 5750 Ellis Avenue, Chicago 37, Illinois. 1956. xxxviii and 1193 pages with illustrations, maps, tables, and index. $12.50.

First large-scale evaluation of what has happened and what is happening to the earth under man's impress. Fifty-three contributing scholars provide important insight into a pioneer field of study.

Britain: An Official Handbook. Her Majesty's Stationery Office. ix and 477 pages with maps, tables, illustrations, appendix, bibliography, and index. 1956. $2.81.

Information on the structure and life of modern Britain.

G. H. Gopsill. **The Teaching of Geography.** St. Martin's Press Inc., 103 Park Avenue, New York 17, New York. 1956. xi and 316 pages with illustrations, appendicies and index. $5.00.

For students who are preparing to become teachers of geography. Assistance of two sorts: principles which form sound practice and principles applied in practical form. Aural and visual illustrations are given.

Edward R. Kolevzon and John A. Heine. **Our World and Its Peoples.** Allyn and Bacon Inc., 1956. 511 pages with table of contents, index, pictures, and maps.

Designed especially for upper grades to meet basic fusion course as well as standard course in world geography. Regional approach to study of world geography, presented as a story of people.

J. S. Keates. **The Penguin Atlas of the World.** Penguin Books, Inc., 3300 Clipper Mill Road, Baltimore 11, Maryland. 1956. xv and 156 pages with contents, list of states and territories, geographical equivalents, abbreviations, 76 pages of index, and 80 pages of maps. $2.50.

Compact, comprehensive atlas. Maps arranged by continent, each section introduced by continental map showing principal features of relief and vegetation.

D. Moreau Barringer. **And the Waters Prevailed.** E. P. Dutton & Co. Inc., New York, 1956. 188 pages with illustrations and author's notes. $3.00.

Theme: development of abstract thinking and power to reason in a child of the Stone Age. Story of Andor, an undersized boy whose greatest strength was his mind, in a tribe where brutish physical prowess was considered the measure of a man.

Raymond Wohlrabe and Werner Krusch. **The Land and People of Austria.** J. B. Lippincott Company. 1956. 117 pages with illustrations and index. $2.75.

The book reveals history, geography, and the culture of Austria. Photographs show the beauty and variety of the Austrian scene.

Sir Gavin De Beer. **Alps and Elephants.** E. P. Dutton & Co., Inc. 1956. xv and 123 pages with illustrations, appendicies, bibliography, references, and index. $2.75.

A modern scientist tells how, by following all the clues, those of natural science as well as those of history, what route Hannibal took in crossing the Alps.

I. C. F. Statham. **Coalming.** Philosophical Library, 15 East 40th Street, New York 16, New York. 1956. xi and 564 pages with illustrations, tables, and index. $15.00.

A revision of the original **South Africa: A Planned Tour,** containing two-hundred pages of new matter. The new material deals with new developments in the Union of South Africa, recent political history, an outline of the racial and native policies of the Union, and the Rhodesias-Nyasaland Federation.

Frank J. Thomas. **There's Money for You in Latin America.** Publicaciones Atlas, Apartado 2988, San Jose, Costa Rica. 276 pages with a list of influential people and a bibliography. $4.00.

Deals with certain aspects of geography as well as money-making opportunities.

J. Dempsey. **Mission On The Nile.** Philosophical Library, Inc., 15 East 40th Street, New York 16, New York. 1956. xii and 247 pages with illustrations. $6.00.

Primarily an account of missionary life in an obscure corner of the Upper Sudan, but it also has information about the habits and history of the little-known Shilluk people.

Delia Goetz. **Neighbors to the South.** Harcourt, Brace and Company, 383 Madison Avenue, New York 17, New York. 1956. 179 pages with illustrations and index. $3.50.

Revised and enlarged book on the Republics of Central and South America. Main emphasis is on the countries as they are today, but includes important historical facts about them and information on their national heroes—material that gives perspective to present-day happenings.

R. D. Charques. **A Short History of Russia.** E. P. Dutton & Co., Inc., 300 Fourth Avenue, New York 10, New York. 1956. 284 pages with a selected reading list and index. $3.95.

This book is addressed to the reader who does not know a great deal about the

subject. It covers, within relatively brief compass, the entire period from the myth-illumined beginnings of the Russian state to the cataclysmic fall of Tsarism and the spartan years of Soviet rule.

George E. Ross. **Know Your World.** E. P. Dutton & Co., Inc., 300 Fourth Avenue, New York 10, New York. 1956. 65 pages with maps and illustrations. Paper binding $1.50; Cloth binding $2.50.

This book gives the basic historical, governmental, economic, and geographical facts on 169 countries and dependencies.

Sir Edmund Hillary and George Lowe. **East of Everest.** E. P. Dutton & Co., Inc., 300 Fourth Avenue, New York 10, New York. 1956. 48 pages with illustrations. $5.00.

A story of Sir Edmund Hillary's next mountain adventure after Everest 1953; an account of that eventful New Zealand Alpine Club expedition to the Barun Valley. George Lowe, another member of Sir John Hunt's victorious Everest team, has his own tale to tell of near-disaster.

G. Révész. **The Origins and Prehistory of Language.** Philosophical Library, Inc., 15 East 40th Street, New York 16, New York. 1956. vii and 240 pages with a summary, bibliography, and index. $7.50.

The book is a learned treatise on the origins of speech, first published in German at Berne in 1946.

E. C. Roberson. **Atomic Energy.** Philosophical Library, Inc., 15 East 40th Street, New York 16, New York. 1956. 142 pages with illustrations. $4.75.

This book tells how the existence of atoms was proved and it shows what atoms are really like. It also tells what happens when atoms explode, and how the energy released in these explosions can be used in bombs or to drive trains, ships, aeroplanes and electric generators.

Bibliography of Teaching Aids. American Forest Products Industries, Inc., 1816 N Street, N.W., Washington 6, D.C. 1956-1957. 14 pages listing free forestry teaching aids.

A study of our forests thru teaching aids are made available to the schools of the United States by the nation's forest industries.

Louis H. Powell. **Globes and Spherical Maps.** Science Bulletin No. 4. The Science Museum, 51 University Avenue, St. Paul 3, Minnesota. 1956. 16 pages with illustrations and bibliography.

Outline of the results of the Museum's studies of the properties and modern uses of globes and other types of spherical maps.

Clyde Perry Patton. **Climatology of Summer Fogs in the San Francisco Bay Area.** University of California Press, Berkeley 4, California. 1956. Pages 113 thru 200 with illustrations. $2.00.

Descriptive, tho the main conclusions are based on statistical analyses.

L. Dudley Stamp, Edited. **Report of a Symposium** held at Makere College, September, 1955. Geographical Publications Ltd., London. 1956. 104 pages with illustrations.

A report of a geographical symposium held at Makere College, the University College of East Africa, Kampala, Uganda, 10th to 17th September, 1955, under the auspices of the International Geographical Union and with the financial support of the United Nations Educational, Scientific and Cultural Organization.

Visit Argentina. Travel Division, Pan American Union, Washington, D.C. 1956. 40 pages with a map and illustrations. $0.15.

A guide for the tourist. A brief description of Argentina's history and its people; practical advise on entry requirements, currency, clothing, U. S. Customs; tips on shopping, sports, entertainment are provided with 46 photographs and a full-page map.

Sven Godlund. **Bus Service in Sweden.** C. W. K. Gleerup Publishers, Lund. 1956. 72 pages with illustrations and references.

A geographical and statistical survey of the bus service in Sweden.

Sven Godlund. **The Function and Growth of Bus Traffic Within the Sphere of Urban Influence.** C. W. K. Gleerup Publishers, Lund. 1956. 80 pages with illustrations and references.

This book deals with the relationship between bus service and urban development in functional systems in Sweden.

The Ports of Wilmington and Morehead City, North Carolina. Corps of Engineers Department of the Army and Maritime Administration, U. S. Department of Commerce. Superintendent of Documents, Government Printing Office, Washington 25, D.C. 1957. ix and 164 pages with maps and tables. $1.75.

Covers the principal ports of the United States with data for use of importers, exporters, manufacturers, railroads, steamship lines, and others interested in the development of harbors and the establishment of port and terminal facilities.

Raymond E. Lamborn. **Geology of Tuscarawas County.** Division of Geological Survey, Orton Hall, The Ohio State University, Columbus 10, Ohio. 1957. ix and 269 pages with maps, tables, and index. $3.00.

Describes the physical geology of Tuscarawas County; surface features and their history; bed rock, sandstone, shale, and coal, and their economic importance; and oil and gas production and possibilities.

W. G. V. Balchin. **Geography and Man.** Pitman Publishing Corporation, 2 West 45th Street, New York 36, New York. 1957. Three volumes containing 1368 pages with illustrations and an index. $39.50.

Monumental work prepared by 75 eminent authorities and edited by W. G. V. Balchin. Basic reference for all geographic libraries.

Major-General H. P. W. Hutson. **The Ornithologists' Guide.** Philosophical Library, Inc., 15 E. 40th Street, New York 16, New York. 1957. xix and 275 pages with illustrations, index of birds, and general index. $10.00.

A comprehensive guide for all aspects of bird study. A guide to bird watchers and scientific workers internationally. Reference is made to articles by leading authorities who discuss the theory and practice of bird study, survey the present state of knowledge and indicate opportunities for further work by amateurs as well as experts. Field techniques are described and practical hints for their operation. There is a regional directory which lists all the important ornithological societies, museums and collections in various overseas countries so that useful contacts can be made.

A. W. Anderson. **Plants of the Bible.** Philosophical Library, Inc., 15 East 40th Street, New York 16, New York. 1957. 72 pages with illustrations. $6.00.

Seventy plants are referred to and a considerable botanical variety of work is examplified by the inclusion of edible plants, spices, balm, fruit as well as flowers.

Alice Taylor. **India.** Holiday House, 8 West 13th Street, New York 11, New York. 1957. 26 pages with illustrations. $2.00.

A simple presentation of how the mingling of diverse elements is affecting India within and molding it to act the role as a mediator among nations.

G. Etzel Percy and Associates. **World Political Geography.** Second Edition. Thomas Y. Crowell, 432-4th Avenue, New York, New York. 1957. xviii and 734 pages with illustrations, bibliography, biographical notes, and index. $7.50.

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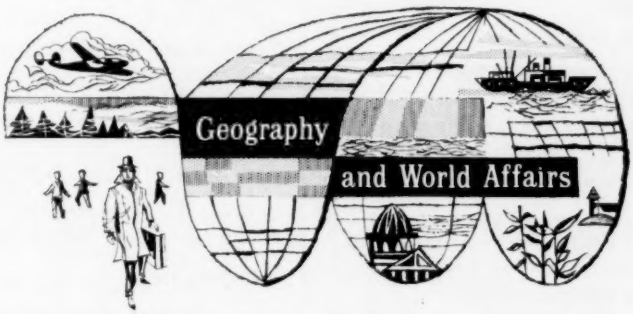

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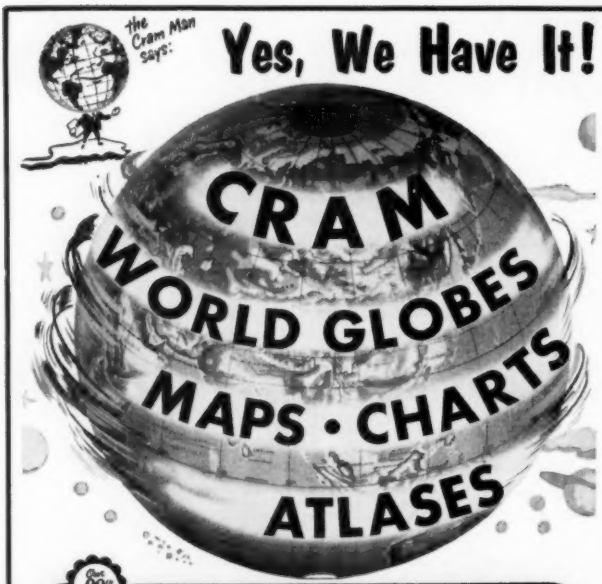

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